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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,348	08/27/2003	Steven E. Brown	03029	4171
7590 04/29/2004			EXAMINER	
Martha Ann Finnegan, Esq. Cabot Corporation 157 Concord Road Billerica, MA 01821-7001			FITZGERALD, JOHN P	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 04/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/649,348	Applicant(s) BROWN ET AL.	
	Examiner John P Fitzgerald	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10-27-2003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawing Objections

1. The drawings are objected to because: a) the dark background of the plot indicated in Fig. 1 reproduces poorly, a blank or white background is suggested; b) the plot indicated in Fig. 3 is askew, resubmission is necessary. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification Objections

2. The disclosure is objected to because of the following informalities: On page 18 of the instant application, paragraph [0059] beings: "The figure above.." it is unclear as to which of the Figures this is referring. On page 20, line two, please change "describe" to "described." Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-11 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Namely, the preamble of the claim 1 states "a method for determining a rheological master curve....," however, step e) fails to recite that the "rheological master curve"

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is produced after “correlating” the “rheological property to a difference between the “work of adhesion” and the “work of cohesion.” Furthermore, in general, a ‘curve’ is a functional relation between dependent and independent variables, typically of the form $f(x) = ax + b$ (for linear functions/curves, where a and b are constants, and x is the independent variable. The claim fails to clearly indicate these ‘curve’ parameters, or identify the independent and dependent variables. As similar argument is made for independent claim 5.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over “Adhesion and components of solid surface energies by John H. Clint, published in *Current Opinion in Colloid & Interface Science* 6, pp. 28-33 (2001) and “A Novel Method for Surface Free-Energy Determination of Powdered Solids” by Emil Chibowski et al., published in *Journal of Colloid and Interface Science* 240, 473-479 (2001). Clint discloses a method for determining a rheological master curve (Fig. 1) (work of adhesion W_a vs. rheological property of shear strength τ) for a filler in a matrix composition (as well as thus predicting a value for a rheological property as recited in claim 8) having all of the claimed method steps and elements including determining the work of adhesion W_a , determining the surface energy components from contact angles utilizing probe liquids (note: similar methods employed for fillers, probe solids, matrices,

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etc., is well within the purview of one of ordinary skill in the art, as recited in claim 2 a., b. c. and d.) However, Clint does not expressly disclose the determination of the work of cohesion W_c of the filler, subsequent determination of the difference between the work of cohesion and adhesion ($W_c - W_a$) and correlating the result (i.e. forming a functional relationship) to a rheological property to form the rheological curve. Chibowski et al. teach the determination of surface energies, contact angles for a least three probe liquids, work of adhesion W_a (eqn. 5), work of cohesion W_c for a filler and the difference between the two forming functional relationships based on the difference of the works of adhesion and cohesion (eqns. 13-16). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ include the method steps of determining the work of cohesion and subsequently employing the difference between the work of cohesion and the work of adhesion, as taught by Chibowski, and thus modifying the correlation (i.e. functional relationship) of Fig. 1, disclosed by Clint, forming a new correlation (functional relationship) between the rheological property of shear strength τ to the difference between the work of cohesion and the work of adhesion to more accurately describe the surface free-energy of the system. In specific regards to claim 3, 4, 6, 7, 9 and 10, the utilization of various rheological properties (i.e. shearing stress/rate, viscosity, elastic modulus, yield point, etc.) of a material in a functional relationship between the difference of the work of cohesion and the work of cohesion is well within the purview of one of ordinary skill in the art and is based on design choice for exploring the particular chosen rheological property and it's functional behavior and/or relationship to other measured/calculated parameters. Lastly, regarding method claim 11, it would have been well with in the skill level of

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one ordinary in the art to perform the repetition of any method steps and the subsequent further determination of results based on the rheological master curve disclosed by Clint and Chibowski.

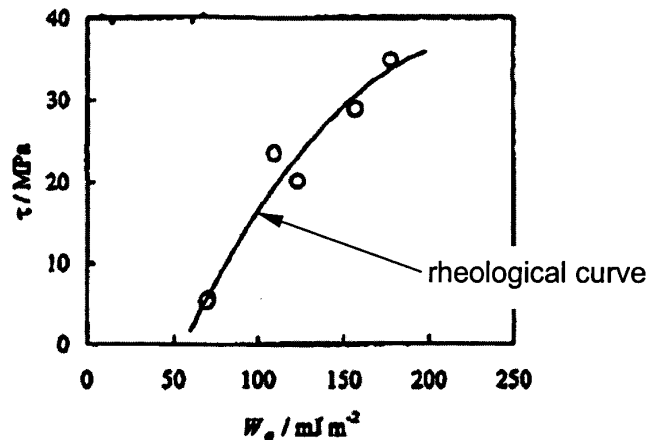


Fig. 1
Clint

Conclusion

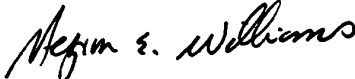
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents/PreGrant Publications to Kato et al., Sohl, Dyrud, Hembree, Lee et al., Yamada et al., Hajduk et al. all teach various aspects of the instant invention. Wed documents of abstracts for the Journal of Rheology, vols. 41, 42, 45, the Program for Acid-Base Symposium, and the Rheological Phenomena and Structure Formation in Multiphase Polymers by M. Holz all teach various aspects of the instant invention.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Fitzgerald whose telephone number is (571) 272-2843. The examiner can normally be reached on Monday-Friday from 7:00 AM to 3:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on (571) 272-2208. The fax phone number for the organization where this

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application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JF
04/22/2004


HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800